

Movement Disorders (APK 6145)

David E.Vaillancourt, PhD

Time and Place: T, Period 2 (8am – 9am), W (8:30 – 10:30) McKnight Brain Institute, FL-GYM 225

Text Book: Lecture notes only

Instructor Contact: email: vcourt@ufl.edu;; phone: 4-1770

Course objectives:

The course covers the sensory and motor systems of the nervous system responsible for regulating movement in movement disorders. We cover movement disorders including Parkinson's disease, tics, Huntington's disease, dystonia, tremor, spinal cord injury, spasticity, cerebellar disorders, and speech and language disorders. Students will be asked to attend the weekly clinical meetings using Zoom with the Fixel Institute to see a first-hand clinical perspective of movement disorders. The course integrates motor neurons, upper motor neurons, cortical physiology of movements, basal ganglia physiology, cerebellar physiology, posture, and eye movements. We will also discuss techniques used to measure movement and brain structure and function.

In addition to lectures, students will be given primary literature to read and present. Students will be expected to lead a discussion of a research article on the movement disorder discussed each week. A class research project will be completed by each student, using available data on a movement disorder to test a hypothesis of interest to each student.

Evaluation:

Article Presentation (20%)

Attendance (30%)

In-class Discussion (20%)

Class Project (30%)

Attendance:

It is expected that students will attend all classes regularly.

Grades:

Grading scale will be consistent with the scale below.

<http://www.isis.ufl.edu/minusgrades.html>

A (4.0)	93 – 100%
A- (3.67)	90 – 92.99%
B+(3.33)	87 – 89.99%
B (3.00)	83 – 86.99%
B- (2.67)	80 – 82.99%
C+(2.33)	77 – 79.99%
C (2.00)	73 – 76.99%
C- (1.67)	70 – 72.99%
D+(1.33)	67 – 69.99%
D (1.00)	63 – 66.99%
D- (0.67)	60 – 62.99%
E (0.00)	less than 60%

Student Learning Objectives:

At the end of this course the student will be able to demonstrate mastery of the following learning objectives:

- 1) Be conversant in movement disorders research.
- 2) Understand the prevalence, pathophysiology, motor deficits, cognitive deficits, and treatments of each disorder.
- 3) Understand the most up to date research studies from major journals about each disorder.
- 4) Observe and participate with practicing physical therapists, neurologists, neurosurgeons, and occupational therapists who treat and care for patients with movement disorders.
- 5) Understand the clinical database for the Parkinson's Progressive Marker Initiative

Policy for Make-up exams and other work:

Make-up exams and other work can be requested given that there is a medical, family, or other emergency that deems the need for a make-up.

Policy on disabilities:

The course will provide accommodations to students with disabilities. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

University Policy on Academic Misconduct: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

Getting Help:

For issues with technical difficulties for E-learning in Sakai, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

** Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at <http://www.distance.ufl.edu/getting-help> for:

- Counseling and Wellness resources

- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Articles:

- Select a clinical topic related to the course.
- Lead a discussion of the article for the class. Using power point is preferred.

Fixel Institute Calendar:

https://calendar.google.com/calendar/embed?src=68shg2kcn9ck6q7o1mprt7ni0%40group.calendar.google.com&ctz=America%2FNew_York

Weekly Outline:

Week/Date	Material
Week 1 <i>Jan 5</i>	Syllabus explanation Lecture: Brain Anatomy
Week 2 <i>Jan 12</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Lecture: Methods 2: PET, MRI and fMRI, DTI, TMS, EEG Assignment of papers 1-7 for Week 3.
Week 3 <i>Jan 19</i>	Project explanation, students work together to identify project goal and topic Presentations: Grafton 1996; Ogawa 1992; Smith 2009; Friston 1996; Spraker 2007; Portnow 2013; Rothwell 1991. Assignment of papers 8-11 for Week 4
Week 4 <i>Jan 26</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Lecture: Diagnosis of Parkinson's Disease Presentations: Burciu 2017; Mitchell 2021; Castellanos 2015; Du 2011 (only Burciu; Castellanos; Du will be presented) (please read Mitchell on your own) Assignment of papers 12 and 13 for Week 5
Week 5 <i>Feb 2</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Lecture: Pathophysiology of Parkinson's Disease Presentations: Bergman 1990; Kordower 2013 Assignment of papers 14 and 15 for Week 6
Week 6 <i>Feb 9</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Lecture: Treatments for Parkinson's Disease Presentations: Deuschl 2006; Olanow 2009 Assignment of papers 16-20 for Week 8
Week 7 <i>Feb 16</i>	No Movement Rounds this Week – work on projects Guest Speaker: Dr. Tracy Tholanikunnel, RLS and Sleep Disorders
Week 8 <i>Feb 23</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Presentations: Corcos 2013; Li 2012; Rascol 2000; Herz 2014; Arpin 2021. Assignment of papers 21 for Week 10
Week 9 <i>March 2</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Guest Speaker: Dr. Josh Wong, DBS current and state of the art
Week 10 <i>March 16</i>	No Movement Rounds This Week – work on projects Lecture: Huntington's Disease Presentation: Rosas 2008. Assignment of paper 22 and 23 for Week 11
Week 11 <i>March 23</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Lecture: Tremor (Cerebellar Tremor, Essential Tremor, Psychogenic Tremor Only) Presentations: Groppa 2015; Favilla 2012. Assignment of paper 24, 25, 26 for Week 12
Week 12 <i>March 30</i>	No Movement Rounds This Week – work on projects Lecture: Dystonia Presentation: Argyelan 2009, Carbon 2009, Caffall 2021
Week 13 <i>April 6</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) Guest Speaker: Dr. Chris Hess, Myoclonus Disorder

Week 14 <i>April 13</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) <u>Project Presentations</u>
Week 15 <i>April 20</i>	Clinical: Zoom with Fixel Institute (Tuesday 8-9 am) <u>Project Presentations</u>
Week 16	

Papers for presentation

Week/Date	Material
Week 3 <i>Jan 19</i>	Presentations: <ol style="list-style-type: none"> 1. Grafton et al. 1996. Localization of grasp representations in humans by positron emission tomography. 2. Ogawa et al. 1992. Intrinsic signal changes accompanying sensory stimulation: Functional brain mapping with MRI. 3. Smith, Fox et al 2009. Correspondence of the brain’s functional architecture during activation and rest. 4. Friston et al 1996. Movement-Related Effects in fMRI Time-Series. 5. Spraker et al. 2007. Role of individual basal ganglia nuclei in force amplitude generation. 6. Portnow et al. 2013. The history of cerebral PET scanning. 7. Rothwell et al. 1991. Stimulation of the human motor cortex through the scalp.
Week 4 <i>Jan 26</i>	Presentations: <ol style="list-style-type: none"> 8. Burciu et al. 2017. Progression marker of Parkinson’s disease: a 4-year multi-site imaging study. 9. Castellanos et al. 2015. Automated neuromelanin imaging as a diagnostic biomarker for PD. 10. Du et al. 2011. Combined R2 and diffusion tensor imaging changes in the substantia nigra in PD. 11. Mitchell et al 2021. Emerging Neuroimaging Biomarkers Across Disease Stage in Parkinson Disease.
Week 5 <i>Feb 2</i>	Presentations: <ol style="list-style-type: none"> 12. Bergman et al. 1990. Reversal of experimental parkinsonism by lesions of the STN. 13. Kordower et al. 2013. Disease duration and the integrity of the nigrostriatal system in PD.
Week 6 <i>Feb 9</i>	Presentations: <ol style="list-style-type: none"> 14. Deuschl et al. 2006. A randomized trial of DBS for PD. 15. Olanow et al. 2009. A double-blind, delayed-start trial of rasagiline in PD.
Week 8 <i>Feb 23</i>	Presentations: <ol style="list-style-type: none"> 16. Corcos et al. 2013. A two-year randomized controlled trial of progressive resistance exercise for PD. 17. Li et al. 2012. Tai Chi and postural stability in patients with PD. 18. Rascol et al. 2000. A five-year study of the incidence of dyskinesia in patients with early PD who were treated with ropinirole or levodopa. 19. Herz et al. 2014. The acute brain response to levodopa heralds dyskinesias in PD. 20. Arpin et al. 2021. Diffusion Magnetic Resonance Imaging Detects Progression in Parkinson’s Disease: A Placebo-Controlled Trial of Rasagiline.
Week 10 <i>March 16</i>	Presentation: <ol style="list-style-type: none"> 21. Rosas et al. 2008. Cerebral cortex and the clinical expression of Huntington’s disease: complexity and heterogeneity.

Week 11 March 23	Presentations: 22. Groppa et al. 2015. Physiological and anatomical decomposition of subthalamic neurostimulation effects in essential tremor. 23. Favilla et al. 2012. Worsening essential tremor following deep brain stimulation: disease progression versus tolerance
Week 12 March 30	24. Argyelan et al. 2009. Cerebellothalamocortical Connectivity Regulates Penetrance in Dystonia. 25. Carbon et al. 2009. Increased sensorimotor network activity in DYT1 dystonia: a functional imaging study. 26. Caffall et al. 2021. The HIV protease inhibitor, ritonavir, corrects diverse brain phenotypes across development in mouse model of DYT-TOR1A dystonia